

Storage information in LFC

- Are there any way of storing storage specific information in LFC to help better utilize storage by clients and to manage the storage
- Use existing LFC schema to avoid any change.
- Use existing LFC client APIs for easier adaptation by clients and to avoid any unnecessary development.

LFC Schema

Name	Type
FILEID	NUMBER
NBACCESSES	NUMBER
CTIME	NUMBER(10)
ATIME	NUMBER(10)
PTIME	NUMBER(10)
LTIME	NUMBER(10)
R_TYPE	CHAR(1)
STATUS	CHAR(1)
F_TYPE	CHAR(1)
SETNAME	VARCHAR2(36)
POOLNAME	VARCHAR2(15)
HOST	VARCHAR2(63)
FS	VARCHAR2(79)
SFN	VARCHAR2(1103)

Mainly used column

FILEID: key to Cns_file_metadata

SFN: physical file name

HOST: hostname of storage

Unused fields in LFC

- SETNAME,POOL and FS fields are not used by ATLAS (at least not in dCache site) since DDM does not fill these columns
- There are already existing client APIs to access these un-used fields of LFC database.
 - To avoid any new development in LFC client
 - Use lfc_getreplicax API

Why not use these fields!

Additional information in LFCs

- Current LFCs are missing the following useful information
 - ToA
 - Easy way to know where a specific file belongs to a ATLAS specific storage endpoint since a single LFC can contain multiple replicas of the same file/LFN.
 - PNFSID
 - Dcache file id. It is also used as a file name in the storage.
 - Effective use of files.
 - Easy way to manage the storage.

Suggested use of unused LFC fields

- SETNAME
 - PNFSID (or Chimera ID)
- FS
 - ToA
- example
 - GUID:9A3B3BB0-F69F-DD11-8D44-0015171A45B0
 - Two replicas:
 - `srm://dcsrm.usatlas.bnl.gov/pnfs/usatlas.bnl.gov/BNLT0D1/data08_cos/Raw/data08_cos.00092057.physics_IDCosmic.daq.RAW.o4_T1224666896/daq.ATLAS.0092057.physics.IDCosmic.LB0047.SFO-4._0003.data`
 - ToA: BNL-OSG2_DATADISK
 - PNFSID: 00030000000000005026438
 - `srm://dcsrm.usatlas.bnl.gov/pnfs/usatlas.bnl.gov/BNLT1D0/data08_cos/Raw/data08_cos.00092057.physics_IDCosmic.daq.RAW.o4_T1224666896/daq.ATLAS.0092057.physics.IDCosmic.LB0047.SFO-4._0003.data_DQ2-1227544558`
 - ToA: BNL-OSG2_DATATAPE
 - PNFSID: 000200000000000014C01B8

Why dCache sites need PNFSIDs in LFC

- PNFSID is the unique ID of file in dCache.
- PNFSID is also the name of file in dCache pools.
- PNFSID provides a fastest way to access a file in dCache by bypassing the most of name space operation.
 - `dccp pnfs://host:port/PNFSID /destinationfile`
- Connecting PNFSID in LFC provides the easiest way to get checksum of a specific file in dcache read pools

Why ToA in LFC

- It will be the quickest way to distinguish ToA of a physical file in LFC without any other API.
- Also, it will provides an easy way to find if there are multiple replicas in one ToA.
 - Eg guid: 0020B466-8A61-DC11-8CBE-001125C48F04
 - srm://dcsrm.usatlas.bnl.gov/pnfs/usatlas.bnl.gov/MCDISK/trig1_misal1_mc12/AOD/trig1_misal1_mc12.006251.AcerMCttbar.recon.AOD.v12000605_tid013580/AOD.013580._00959.pool.root.18
 - BNL-OSG2_MCDISK
 - srm://dcsrm.usatlas.bnl.gov/pnfs/usatlas.bnl.gov/MCDISK/trig1_misal1_mc12/AOD/trig1_misal1_mc12.006251.AcerMCttbar.recon.AOD.v12000605_tid013580/AOD.013580._00959.pool.root.18_DQ2-1226682451
 - BNL-OSG2_MCDISK
 - srm://dcsrm.usatlas.bnl.gov/pnfs/usatlas.bnl.gov/ustier1_disk/usatlas1/trig1_misal1_mc12/AOD/trig1_misal1_mc12.006251.AcerMCttbar.recon.AOD.v12000605_tid013580/AOD.013580._00959.pool.root.18
 - BNLDISK